IN THE UNITED STATES PATENT AND TRADE MARK OFFICE

In re Patent Application of
Kenji, KIMURA et al.
Serial No.: 09/529,717 Group Art Unit: 1711
Filed: August 22, 2000 Examiner: Rabon Sergent
For: POLYURETHANE COMPOSITION

DECLARATION OF kenji KIMURA UNDER 37 C.F.R. 1.132

Sir:

I, Kenji Kimura, a citizen of Japan, residing at 9-5-1 Honmachi, Toyonaka-shi, Osaka, Japan declare that:

I majored in synthetic organic chemistry and completed the master's course of Kyoto Institute of Technology, Faculty of Technology, Department of Applied Chemistry in March, 1990.

I joined Research Laboratories at Osaka of Sumitomo Chemical Company, Limited and was engaged in the research of polymer additives since April, 1990 to October, 1998.

I was engaged in marketing of polymer additives at Specialty Chemicals Division at Tokyo of Sumitomo Chemical Company, Limited until October, 2002.

I moved to Fine Chemicals Research Laboratories at Osaka of Sumitomo Chemical Company, Limited thereafter and up to the present, I have been engaged in synthetic and applied research and development of polymer additives.

I am the inventor of the above-identified application and am familiar with the subject matter thereof.

I have read the Office Action mailed with references cited therein.

I have made the following experiments in order to show that the presently claimed invention has an unexpected superior effect over the teachings of the cited references, Ishii, JP46-27874A, and JP57-108154.

Experiments

1) Materials

An antioxidant AO-1, 3,9-bis(2-(3-(3-tert-butyl-4-hydroxy-5-methylphenyl)propionyloxy)-1,1-dimethylethyl)-2,4,8,10-tetraoxaspiro[5.5]undecane as disclosed in JP46-27874, and an amide compound B-2, stearic acid amide as disclosed by Ishii('744) were used in the Experiment.

2) Preparation of the test pieces

In Run No. 6, a dry-blended composition containing 100 parts by weight of polyurethane manufactured by Nihon Mirakutoran Company, Ltd under the trade name P390, 0.2 parts by weight of an antioxidant AO-1, 3,9-bis(2-(3-(3-tert-butyl-4-hydroxy-5-methylphenyl)propionyloxy)-1,1-dimethylethyl)-2,4,8,10-tetraoxaspiro[5.5]undecane and 0.4 part by weight of the amide compound B-2, stearic acid amide was extruded with 30 mmΦ-single screw extruder at 185℃ to give pellets, which were then thermo-pressed at 180 ℃ and at a pressure of 100kgf/m² to produce a sheet of 1 mm thickness.

In other runs the test pieces were prepared in a similar manner as in Run No. 6 by using the antioxidant or amide compound.

3) Yellowing Test

The test pieces prepared as above were exposed to 650 ppm NOx gas for 1 hour, and then YI values of the test pieces were measured by a color computer.

4) Coloring Test by Heat

The test pieces prepared as above was subjected to aging at 150℃ for 3 hours, and then the YI values were measured by a color computer, which is manufactured by MINOLTA Company, Limited under the trade name of SPECTROPHOTOMETER CM-3500d.

The test results are summarized in Table 1 below, and the results of Run Nos. 4, 9, 10, 11 and 5 are plotted in the following Fig. 1.

In Fig. 1, the dotted line is drawn between Run No. 4 where B-2 is used 1.2 parts by weight per 100 parts by weight of polyurethane and Run No. 5 where AO-1 is used 1.2 parts by weight per 100 parts by weight of polyurethane.

Results and conclusions

Re: Yellowing

The dotted line is understood to show expected yellowing effect by the combination of AO-1 and B-2 when the combination of AO-1 and B-2 has merely additional effect.

The experimental results show that the compositions of the present invention as disclosed in Run No. 9 to 11 containing AO-1 and B-2 in combination in the total amount of 1.2 parts per 100 parts by weight of polyurethane showed superior results as compared to the expected effect based on the mere additional effect of AO-1 and B-2.

The compositions of Runs No. 9 to 11 are more effectively stabilized than expected.

Re: Coloring

As can be seen from that Table the coloring was improved by the combined use of AO-1 and B-2 as claimed by the present invention.

In view of above, it is shown by the experiments that the presently claimed invention has an unexpected superior effect over the combined teachings of the references.

I declare further that all the statements made herein of my own knowledge are true and that all statements made on information and belief are to be true; and further that those statements were

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made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the above-identified application or any patent issued thereon.

This 7th day of January 2005

K. Kimura

Kenji KIMURA

Table 1 Test Results

Run	AO-1	B-2	Yellowing	Coloring
1	—	—	17.2	12.7
2	—	0.6	4.7	12.7
3	0.6	—	15.3	13.1
4	—	1.2	3.4	13.3
5	1.2	—	14.8	12.8
6	0.2	0.4	3.6	12.1
7	0.3	0.3	2.1	11.9
8	0.4	0.2	2.4	11.9
9	0.4	0.8	3.1	11.8
10	0.6	0.6	2.6	11.3
11	0.8	0.4	1.8	11.6

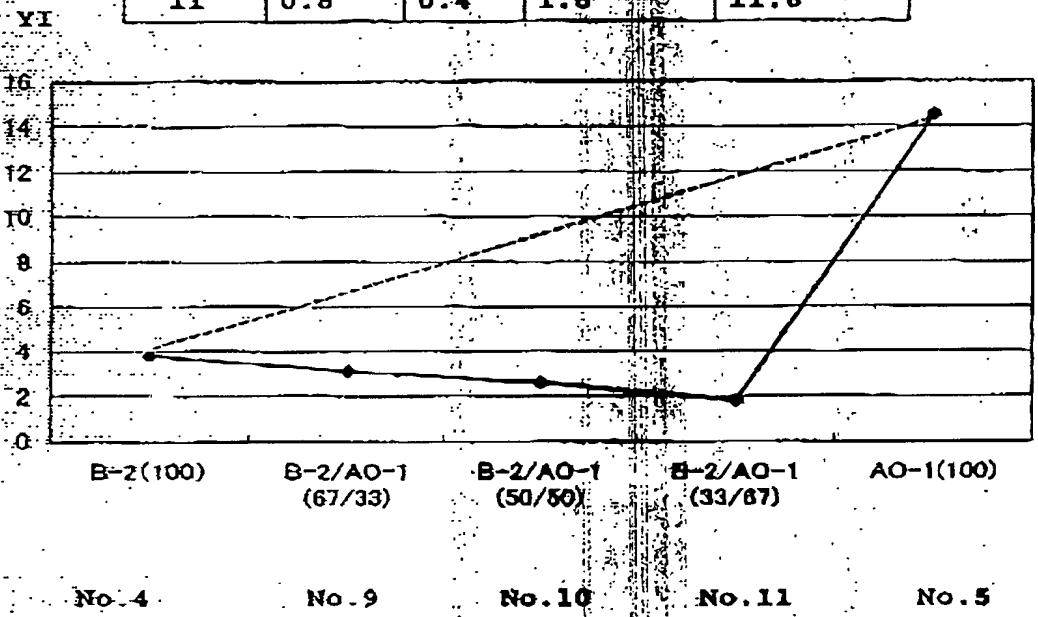

Fig.1